

Notice of Allowability

Application No.

10/759,341

Examiner

Jeffrey T. Barton

Applicant(s)

ZUPPERO ET AL.

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 19 September 2007.
2. ☒ The allowed claim(s) is/are 25,30 and 31.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 20070919
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jeffrey Miller on 29 November 2007.

The application has been amended as follows:

In the claims:

- a. In claim 25 at line 9, please insert the word --and-- after "reaction products;".
 - b. In claim 25 at line 11, please delete the word "and" after "diode;".
 - c. In claim 25 at line 12, please delete the phrase "a semiconductor on which the tailoring material is formed," and insert the phrase --wherein the tailoring material is formed on the semiconductor,--.
 - d. In claim 30 at line 3, please delete the word "having" and insert the word --has-- before the words "a region".
2. The following is an examiner's statement of reasons for allowance:

The primary reasons for allowance are the new limitations that the stabilizing interlayer conductor "physically isolates chemical reactants from the junction" and that "the conductor material, the stabilizing interlayer conductor, the conducting surface, and

the tailoring material are ballistic charge carrier conductors". Zuppero et al (US 2002/0121088) do not teach a stabilizing interlayer conductor (e.g. layer 103 in Figure 3) that physically isolates chemical reactants from the junction (e.g. junction between layers 110 and 111 in Figure 3), nor was any teaching of such a stabilizing interlayer present in the prior art of record. Note that Applicant's disclosure at Page 17, lines 5-10 and Page 18, lines 17-19 is considered to provide support for the limitation that the stabilizing interlayer conductor "physically isolates chemical reactants from the junction", since a layer that isolates highly reactive intermediates (i.e. reactants that are in the process of reacting) as disclosed will clearly perform this function, and the isolation disclosed is "from the metal or material that forms the Schottky barrier", which would reasonably be read as isolating all portions of the material forming the Schottky barrier, which includes the claimed junction between the semiconductor and conductor material.

Even if Hatano et al could be considered capable of performing the intended use of an "electric generator", there is no teaching or suggestion of the instant ballistic charge carrier conductors. Okada et al teach an ohmic contact, which contrasts with the instant ballistic charge carrier conductors as disclosed in the instant specification (Page 6, lines 15-17) and elaborated upon in the remarks submitted on 19 September 2007. Layers of the thickness reported in Okada et al (e.g. the gold layer of 100 nm) are not ballistic charge carrier conductors.

For these reasons, the instant claims are considered to be patentably distinguished from the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Jeffrey T. Barton whose telephone number is (571) 272-1307. The examiner can normally be reached on M-F 9:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JTB
29 November 2007


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